INDEX TO VOLUME LXX.

January 1 to June 30, 1899.

TP 700 .A5

A

Acetylene, by Prof. Vivian B. Lewes 38
Address of President C. H. Raynor, Michigan Gas Association 336
Address of President G. T. Thompson, Western Gas Association 963
Address of President S. J. Fowler, New England Association of Gas Engineers 254
Address of President F. Z Schellenberg, Central Mining Institute of Western Pennsylvania 187
Address of Vice-President E. H. Jenkins, Ohio Gas Light Association 411
Advertising, by H. K. Morrison 331
Air, Liquid, as a New Source of Power: An Engineering Fallacy, by Henry Morton, Ph.D 642
Alexander, J. P. Hydrofluoric Acid Primary Cell 299
*Allen, B. J., Distributing Gas at Pressures Higher Than Usually Obtained with a Holder 292
Alternating Currents, Distribution of, by S. E. T. Ewing 79, 113, 150
Alternating Current Stations, Batteries in, by T. H. Minshall 572
Aluminum Feed Wires 856
Aluminum, Soldering of 972
American Representation at the Paris Exposition of 1900 261
Ammonia, Commercial, Analysis of 687
*Analysis of Gas, Improvements in Apparatus for 850
Analysis of Mantles for Incandescent Gas Burners 188
*Andrews, C. W., Notes on the Construction of a Concrete Gasholder Tank 445
Anti-Trust Law and the Cast Iron Pipe Combination 729
*Apparatus for Manufacturing Gas, Egner's Improved 114
*Apparatus for the Laboratory, by J. L. Sammis 151
Artificial Lighting for Public Institutions, by Prof. C. Lambert 152
Atwater, R. M., Domestic Coke and Briquettes from Retort Coke Ovens 218
Automatic Gas Meters and Cookers 183
Ayrton, Prof. W. E., Non-Integrating Electric Meters 970

B

Barometers, Principle Underlying Mode of Action of 81
Batteries in Alternating Current Stations, by T. H. Minshall 572
Beehive Ovens, Coking of Coal in 337
*Bertsch Universal Plate Shear 79
*Boiler Flue Drilling Machine 226
Boiler Settings in Water Gas Plants, Importance of, by J. R. Lynn 374
*Browning Double-Gripping Pipe Wrench 45
*Bueb's Process of Extracting Cyanogen from Coal Gas 930
*Bunsen Burner Construction, Lecompte System 78
*Burner, Gas, Heller's 646
*Burner, Kern Incandescent Gas 806
Burning Oils, Flash Point of, by Alex. Robertson 450
Bunch of Short Topics, by H. L. Doherty 488
Bye-Product Coke Oven for Manufacture of Illuminating Gas, by H. W. True 844
Bye-Product Coke Ovens, by E. E. Eysenbach 529
Bye-Products at Coke Works, Plant for Obtaining 146
Bye-Products, Recovery of 117

C

*Calorimeter, Cheap Method of Making 684
Carbide Plant, New 688
Carbon Accumulation in Retorts, by N. W. Gifford 335
Carbonic Oxide, New Method for the Estimation of 924
Carbon, Volumetric Estimation of 971
Cast Iron Pipe Combination and the Anti-Trust Law 729
Cement Mortar, Frozen, Tests of 45
Cement, Portland, Effect of Frost on 9
Central Electric Stations, Trend of Designing in 258
Central Mining Institutue of Western Pennsylvania, Address of President F. Z. Schellenberg 187
Charcoal, Spontaneous Ignition of 261
Chemistry as an Aid in Building 614
Civil Engineers, Advice to Young 939
Clarke, A. L., Notes on Purification 688
Cline, J. W. B., Welsbach Street Lighting 595
Coal and Coke in Montana 776
Coal, Coking of, in Beehive Ovens 337
Coal Field of West Virginia, Thacker 854
*Coal Handling Machinery, by Chas. Piez 220
Coal Industry as an Index of National Progress 43
Coal in North Dakota 186
Coal Mining in Illinois in 1898 82
Coal, Sulpher from, by Chas. C. Upham 693
Coal Tar and the Preparation of Its Products 807
Coke and Briquettes from Retort Coke Ovens, by R. M. Atwater 218
*Coke Handling Plant, by T. Holgate 884
Coke Works, Plant for Obtaining Bye-Products at 146
*Coke, Manufacture of 727
Coles, S. C., Preserving and Fireproofing Timber and Timber Substitutes 377
Cooking by Gas, Automatic Meter for 183
Cooking by Gas, Exhibitions of, by George W. Graves 2
Commissions, Illicit 853
*Concrete Gasholder Tank, Notes on the Construction of, by C. W. Andrews 445
*Connecting Mains of a Provincial Gas Company's Stations, Special Features in, by W. D. Gibb 764
Consolidation and Prices 612
Contractors' Mistakes in Estimating 48
Correspondence Schools, by A. C. Humphreys 328
Cravath, J. R., Why Some Small Electric Light Plants Do Not Pay 147
Croissant, H., Innovation in and Future of the Water Gas Industry 409, 448
Crookes, Sir William, New Gas Etherion 8
*Culnane Hydraulic Pile Sinking Machine 116
*Cyanogen from Coal Gas, Bueb's Process of Extracting 930

CORRESPONDENCE—

Benzole and Its Value 842
Kern Burner and the Kern Incandescent Gas Light Company 962
Letter from Wm. W. Goodwin 575
Possibilities of the Bye-Products from Coke Ovens 773
Pranks of those Interested in Opposition Gas Enterprises 893
President Crockett and the Hall Process 455
"Slip" of Coal in Inclined Retorts 482
Special English Correspondence, by Norton H. Humphrys 153, 297, 453, 651, 13, 973

D

Dales, J. H., High-Speed Engine 189
Debell, E. L., Systems of Electric Meter Rates 181
*Dehydrating Gas, Hequembourg's Method of and Apparatus for 412
Desirable Increase and Its Source, by S. F. Wolff 376
*Differential Rate Meter, by L. C. Reed 804
*Distributing Gas at Pressures Higher than Usually Obtained With a Holder, by B. J. Allen 292
Distributing Systems for Three-Phase Plants 684
Determination of Smoke 972
Distribution of Alternating Currents, by S. E. T. Ewing 79, 113, 150
*Distribution Records: Their Uses and Preservation, by J. A. Mayers 482
Doherty, H. L., Bunch of Short Topics 488
Donkin, Bryan, Gas Engines: Number in Use and Their Applications 934
Doty, Paul, Causes Underlying the Formation of Napthalene and Their Prevention 967
Douglas, H. W., Use of Gas for Purposes Other than Fuel 407
*Drilling Machine for Boiler Flues 226

E

Earthwork, Measurement of 260
*Egner's Improved Apparatus for Manufacturing Gas 114
Electrical Apprentices and Journeymen, Education of, by A. A. Hamerschlag 111
Electric Current, Standard Charges for, by C. R. Maunsell 449
Electricity as a Motive Power in Modern Steel Works and Blast Furnaces, by A. E. Maccoun 611
Electric Lamps, Incandescent, Difference Between Good and Bad 970
Electric Light, Nernst's 650
Electric Light Plants, Why Some Do Not Pay, by J. R. Cravath 147
Electric Meter Rates, Systems of, by E. L. Debell 184
*Electric Meters, Maximum Demand, by E. S. Halsey 771
Electric Meters, Non-Integrating, by Prof. W. E. Ayrton 970
Electric Plant, Enlarging Capacity of 190
Electric Plant, Night Circuit Only, Method of Charging for Lights 190
Electric Street Lighting, by Albert Sheible 570
*Electric Supply Stations, Steam Mains for, by R. Summerfield 691
Electrolysis and Railways 609
*Electrolysis of Water Mains, Example of 183
*Electrolysis Manifestations, Jersey City, N. J 237
Electrolysis, Problem of 647
*Emory, F. L., Test of a Steam Separator 726
Engines, High-Speed, by J. H. Dales 189
Enrichers, by E. H. Yorke 367
*Exhausting Plant for Gas Works 648
Exhaust Steam, Utilization of 223
Estimating, Contractors' Mistakes in 48
Etherion, Supposed New Gas, by Sir William Crookes 8
Ewing, S. E. T., Distribution of Alternating Currents 79, 113, 150
Exhibitions of Cooking by Gas, by George W. Graves 2
Experiences with Incandescent Gas Light, by Norton H. Humphrys 607, 644, 686, 728
Eysenbach, E. E., Bye-Product Coke Ovens 529

EDITORIALS—

Adding to the Perplexities of the Boston Mess in Gas 442
Altering the Western Association's Meeting Time 73
Anonymous Contribution 37
Association Meetings for February 182
Bolcom, H. C., Death of 290
Defining the Position of the Kentucky Heating Company 641
Dollar Mark at Hartford, Conn 482
Drawing the Line as to a Profitable Gas Consumer 601
Faben, Charles R., Sr., Death of 290, 325
Fatuous War of Rates 682
Gasholder Disaster, New York City 1, 37, 145
Gill, Joseph Pearson, Obituary Note 842
Graves, J. K., Death of 1
Greenough, William Whitwell, Obituary Note 961
Holmes, Bradner P., Death of 290
Kansas Gas, Water and Electric Light Association, Special Editorial Correspondence 441
Louisville Leads the Way 882
Mayers and Doherty Papers, Ohio Gas Light Association Meeting 481
Meeting of the Western Gas Association 962
Michigan Gas Association, Special Editorial Correspondence 289
Milwaukee Meeting of the Western Gas Association 802
New England Association of Gas Engineers, Special Editorial Correspondence 253
No Change in the New York War of Rates 722
Ohio Gas Light Association, Special Editorial Correspondence 405
Parker, Geo. W., Death of 562
Postponement of the Annual Meeting of the Southwestern Gas, Electric and Street Railway Association 522
Progress in Respect of the Educational Work of the American Gas Light Association 218
Rawson Patents Sustained 521
Report of the Ohio Association's Committee on Municipal Ownership 522
Southwestern Gas, Electric and Street Railway Association, Meeting of 441, 722, 802
Special Circular in Connection with the Meeting of the Western Gas Association 762
Standing of Acetylene 37
Steam in Gas Works Operations 365
Tammany and Municipal Gas 61
"To See Ourselves as Others See Us" 882
Turner, John W., Obituary Note 601
Twenty-second Annual Meeting of the Western Gas Association 882
Warren, Charles F., Obituary Note 3
"Welsbach Street Lighting," Paper by J. W. B. Cline, Ohio Gas Light Association 521
Western Gas Association, Special Editorial Correspondence 921
Yuengling, Frederick G., Obituary Note 37

F

Feed Wires, Aluminum 856
Fireproofing Timber and Timber Substitutes, by S. C. Coles 377
Flash Point of Burning Oils, by Alex. Robertson 450
Forms and Their Uses, by Walton Forstall 602
Forstall, Walton, Some Forms and Their Uses 602
*Foster's Patent Stopper for Inclined Retorts 223
Fowler, S. J. President New England Association of Gas Engineers, Address of 254
Francisco, M. J., Municipal Ownership in Massachusetts 643
Frost's Effect on Portland Cement 9
Frozen Cement Mortar, Test of 45

G

*Gas Analysis, Improvements in Apparatus for 850
*Gas Burner, Heller's 646
*Gas Burner, Kern Incandescent 806
Gas Consumption in Birmingham, Eng 265
*Gas Engine, Lewis 115
*Gas Engines, Care and Management of, by E. C. Hathaway 690
Gas Engines, Number in Use and Their Applications, by Bryan Donkin 934
Gases, Solution of Solids and Liquids in, by M. P. Villard 10, 74
*Gas Exhausters and Gas Exhausting Plant 648
Gas for Purposes Other Than Fuel, by H. W. Douglas 407
*Gasholder Tank, Concrete, Notes on the Construction of, by C. W. Andrews 445
Gasholders in England, Large, by Norton H. Humphrys 763, 803, 843
*Gas Pipe Engineering 923
*Gas Pipes 645
Gas Pipes, Determining Size of, by W. Grafton 685
*Gas Piping Topics 883
Gas Plant, Notes on the Design and Extension of, by J. J. Humphreys, Jr 295
Gas Purification, Discussion on 3
*Gas Purifying Apparatus, Hirts 610
Gas Securities, Market for ..... 13, 49, 85, 121, 156, 193, 228, 265, 300, 340, 380, 417, 456, 496, 537, 576, 615, 655, 696, 736, 776, 816, 856, 896, 936, 976.

INDEX TO VOLUME LXX.

January 1 to June 30, 1899.

TP 700 .A5

A

Acetylene, by Prof. Vivian B. Lewes 38
Address of President C. H. Raynor, Michigan Gas Association 336
Address of President G. T. Thompson, Western Gas Association 963
Address of President S. J. Fowler, New England Association of Gas Engineers 254
Address of President F. Z Schellenberg, Central Mining Institute of Western Pennsylvania 187
Address of Vice-President E. H. Jenkins, Ohio Gas Light Association 411
Advertising, by H. K. Morrison 331
Air, Liquid, as a New Source of Power: An Engineering Fallacy, by Henry Morton, Ph.D 642
Alexander, J. P. Hydrofluoric Acid Primary Cell 299
*Allen, B. J., Distributing Gas at Pressures Higher Than Usually Obtained with a Holder 292
Alternating Currents, Distribution of, by S. E. T. Ewing 79, 113, 150
Alternating Current Stations, Batteries in, by T. H. Minshall 572
Aluminum Feed Wires 856
Aluminum, Soldering of 972
American Representation at the Paris Exposition of 1900 261
Ammonia, Commercial, Analysis of 687
*Analysis of Gas, Improvements in Apparatus for 850
Analysis of Mantles for Incandescent Gas Burners 188
*Andrews, C. W., Notes on the Construction of a Concrete Gasholder Tank 445
Anti-Trust Law and the Cast Iron Pipe Combination 729
*Apparatus for Manufacturing Gas, Egner's Improved 114
*Apparatus for the Laboratory, by J. L. Sammis 151
Artificial Lighting for Public Institutions, by Prof. C. Lambert 152
Atwater, R. M., Domestic Coke and Briquettes from Retort Coke Ovens 218
Automatic Gas Meters and Cookers 183
Ayrton, Prof. W. E., Non-Integrating Electric Meters 970

B

Barometers, Principle Underlying Mode of Action of 81
Batteries in Alternating Current Stations, by T. H. Minshall 572
Beehive Ovens, Coking of Coal in 337
*Bertsch Universal Plate Shear 79
*Boiler Flue Drilling Machine 226
Boiler Settings in Water Gas Plants, Importance of, by J. R. Lynn 374
*Browning Double-Gripping Pipe Wrench 45
*Bueb's Process of Extracting Cyanogen from Coal Gas 930
*Bunsen Burner Construction, Lecompte System 78
*Burner, Gas, Heller's 646
*Burner, Kern Incandescent Gas 806
Burning Oils, Flash Point of, by Alex. Robertson 450
Bunch of Short Topics, by H. L. Doherty 488
Bye-Product Coke Oven for Manufacture of Illuminating Gas, by H. W. True 844
Bye-Product Coke Ovens, by E. E. Eysenbach 529
Bye-Products at Coke Works, Plant for Obtaining 146
Bye-Products, Recovery of 117

C

*Calorimeter, Cheap Method of Making 684
Carbide Plant, New 688
Carbon Accumulation in Retorts, by N. W. Gifford 335
Carbonic Oxide, New Method for the Estimation of 924
Carbon, Volumetric Estimation of 971
Cast Iron Pipe Combination and the Anti-Trust Law 729
Cement Mortar, Frozen, Tests of 45
Cement, Portland, Effect of Frost on 9
Central Electric Stations, Trend of Designing in 258
Central Mining Institutue of Western Pennsylvania, Address of President F. Z. Schellenberg 187
Charcoal, Spontaneous Ignition of 261
Chemistry as an Aid in Building 614
Civil Engineers, Advice to Young 939
Clarke, A. L., Notes on Purification 688
Cline, J. W. B., Welsbach Street Lighting 595
Coal and Coke in Montana 776
Coal, Coking of, in Beehive Ovens 337
Coal Field of West Virginia, Thacker 854
*Coal Handling Machinery, by Chas. Piez 220
Coal Industry as an Index of National Progress 43
Coal in North Dakota 186
Coal Mining in Illinois in 1898 82
Coal, Sulpher from, by Chas. C. Upham 693
Coal Tar and the Preparation of Its Products 807
Coke and Briquettes from Retort Coke Ovens, by R. M. Atwater 218
*Coke Handling Plant, by T. Holgate 884
Coke Works, Plant for Obtaining Bye-Products at 146
*Coke, Manufacture of 727
Coles, S. C., Preserving and Fireproofing Timber and Timber Substitutes 377
Cooking by Gas, Automatic Meter for 183
Cooking by Gas, Exhibitions of, by George W. Graves 2
Commissions, Illicit 853
*Concrete Gasholder Tank, Notes on the Construction of, by C. W. Andrews 445
*Connecting Mains of a Provincial Gas Company's Stations, Special Features in, by W. D. Gibb 764
Consolidation and Prices 612
Contractors' Mistakes in Estimating 48
Correspondence Schools, by A. C. Humphreys 328
Cravath, J. R., Why Some Small Electric Light Plants Do Not Pay 147
Croissant, H., Innovation in and Future of the Water Gas Industry 409, 448
Crookes, Sir William, New Gas Etherion 8
*Culnane Hydraulic Pile Sinking Machine 116
*Cyanogen from Coal Gas, Bueb's Process of Extracting 930

CORRESPONDENCE—

Benzole and Its Value 842
Kern Burner and the Kern Incandescent Gas Light Company 962
Letter from Wm. W. Goodwin 575
Possibilities of the Bye-Products from Coke Ovens 773
Pranks of those Interested in Opposition Gas Enterprises 893
President Crockett and the Hall Process 455
"Slip" of Coal in Inclined Retorts 482
Special English Correspondence, by Norton H. Humphrys 153, 297, 453, 651, 13, 973

D

Dales, J. H., High-Speed Engine 189
Debell, E. L., Systems of Electric Meter Rates 181
*Dehydrating Gas, Hequembourg's Method of and Apparatus for 412
Desirable Increase and Its Source, by S. F. Wolff 376
*Differential Rate Meter, by L. C. Reed 804
*Distributing Gas at Pressures Higher than Usually Obtained With a Holder, by B. J. Allen 292
Distributing Systems for Three-Phase Plants 684
Determination of Smoke 972
Distribution of Alternating Currents, by S. E. T. Ewing 79, 113, 150
*Distribution Records: Their Uses and Preservation, by J. A. Mayers 482
Doherty, H. L., Bunch of Short Topics 488
Donkin, Bryan, Gas Engines: Number in Use and Their Applications 934
Doty, Paul, Causes Underlying the Formation of Napthalene and Their Prevention 967
Douglas, H. W., Use of Gas for Purposes Other than Fuel 407
*Drilling Machine for Boiler Flues 226

E

Earthwork, Measurement of 260
*Egner's Improved Apparatus for Manufacturing Gas 114
Electrical Apprentices and Journeymen, Education of, by A. A. Hamerschlag 111
Electric Current, Standard Charges for, by C. R. Maunsell 449
Electricity as a Motive Power in Modern Steel Works and Blast Furnaces, by A. E. Maccoun 611
Electric Lamps, Incandescent, Difference Between Good and Bad 970
Electric Light, Nernst's 650
Electric Light Plants, Why Some Do Not Pay, by J. R. Cravath 147
Electric Meter Rates, Systems of, by E. L. Debell 184
*Electric Meters, Maximum Demand, by E. S. Halsey 771
Electric Meters, Non-Integrating, by Prof. W. E. Ayrton 970
Electric Plant, Enlarging Capacity of 190
Electric Plant, Night Circuit Only, Method of Charging for Lights 190
Electric Street Lighting, by Albert Sheible 570
*Electric Supply Stations, Steam Mains for, by R. Summerfield 691
Electrolysis and Railways 609
*Electrolysis of Water Mains, Example of 183
*Electrolysis Manifestations, Jersey City, N. J 237
Electrolysis, Problem of 647
*Emory, F. L., Test of a Steam Separator 726
Engines, High-Speed, by J. H. Dales 189
Enrichers, by E. H. Yorke 367
*Exhausting Plant for Gas Works 648
Exhaust Steam, Utilization of 223
Estimating, Contractors' Mistakes in 48
Etherion, Supposed New Gas, by Sir William Crookes 8
Ewing, S. E. T., Distribution of Alternating Currents 79, 113, 150
Exhibitions of Cooking by Gas, by George W. Graves 2
Experiences with Incandescent Gas Light, by Norton H. Humphrys 607, 644, 686, 728
Eysenbach, E. E., Bye-Product Coke Ovens 529

EDITORIALS—

Adding to the Perplexities of the Boston Mess in Gas 442
Altering the Western Association's Meeting Time 73
Anonymous Contribution 37
Association Meetings for February 182
Bolcom, H. C., Death of 290
Defining the Position of the Kentucky Heating Company 641
Dollar Mark at Hartford, Conn 482
Drawing the Line as to a Profitable Gas Consumer 601
Faben, Charles R., Sr., Death of 290, 325
Fatuous War of Rates 682
Gasholder Disaster, New York City 1, 37, 145
Gill, Joseph Pearson, Obituary Note 842
Graves, J. K., Death of 1
Greenough, William Whitwell, Obituary Note 961
Holmes, Bradner P., Death of 290
Kansas Gas, Water and Electric Light Association, Special Editorial Correspondence 441
Louisville Leads the Way 882
Mayers and Doherty Papers, Ohio Gas Light Association Meeting 481
Meeting of the Western Gas Association 962
Michigan Gas Association, Special Editorial Correspondence 289
Milwaukee Meeting of the Western Gas Association 802
New England Association of Gas Engineers, Special Editorial Correspondence 253
No Change in the New York War of Rates 722
Ohio Gas Light Association, Special Editorial Correspondence 405
Parker, Geo. W., Death of 562
Postponement of the Annual Meeting of the Southwestern Gas, Electric and Street Railway Association 522
Progress in Respect of the Educational Work of the American Gas Light Association 218
Rawson Patents Sustained 521
Report of the Ohio Association's Committee on Municipal Ownership 522
Southwestern Gas, Electric and Street Railway Association, Meeting of 441, 722, 802
Special Circular in Connection with the Meeting of the Western Gas Association 762
Standing of Acetylene 37
Steam in Gas Works Operations 365
Tammany and Municipal Gas 61
"To See Ourselves as Others See Us" 882
Turner, John W., Obituary Note 601
Twenty-second Annual Meeting of the Western Gas Association 882
Warren, Charles F., Obituary Note 3
"Welsbach Street Lighting," Paper by J. W. B. Cline, Ohio Gas Light Association 521
Western Gas Association, Special Editorial Correspondence 921
Yuengling, Frederick G., Obituary Note 37

F

Feed Wires, Aluminum 856
Fireproofing Timber and Timber Substitutes, by S. C. Coles 377
Flash Point of Burning Oils, by Alex. Robertson 450
Forms and Their Uses, by Walton Forstall 602
Forstall, Walton, Some Forms and Their Uses 602
*Foster's Patent Stopper for Inclined Retorts 223
Fowler, S. J. President New England Association of Gas Engineers, Address of 254
Francisco, M. J., Municipal Ownership in Massachusetts 643
Frost's Effect on Portland Cement 9
Frozen Cement Mortar, Test of 45

G

*Gas Analysis, Improvements in Apparatus for 850
*Gas Burner, Heller's 646
*Gas Burner, Kern Incandescent 806
Gas Consumption in Birmingham, Eng 265
*Gas Engine, Lewis 115
*Gas Engines, Care and Management of, by E. C. Hathaway 690
Gas Engines, Number in Use and Their Applications, by Bryan Donkin 934
Gases, Solution of Solids and Liquids in, by M. P. Villard 10, 74
*Gas Exhausters and Gas Exhausting Plant 648
Gas for Purposes Other Than Fuel, by H. W. Douglas 407
*Gasholder Tank, Concrete, Notes on the Construction of, by C. W. Andrews 445
Gasholders in England, Large, by Norton H. Humphrys 763, 803, 843
*Gas Pipe Engineering 923
*Gas Pipes 645
Gas Pipes, Determining Size of, by W. Grafton 685
*Gas Piping Topics 883
Gas Plant, Notes on the Design and Extension of, by J. J. Humphreys, Jr 295
Gas Purification, Discussion on 3
*Gas Purifying Apparatus, Hirts 610
Gas Securities, Market for ..... 13, 49, 85, 121, 156, 193, 228, 265, 300, 340, 380, 417, 456, 496, 537, 576, 615, 655, 696, 736, 776, 816, 856, 896, 936, 976.

INDEX TO VOL. LXX.

Gas, The Hated Rival..... 378
Gas Works, Nuisance Question in, by F. H. Shelton..... 333
*Gibb, W. D. Some Special Features in the Connecting Mains of a Provincial Gas Company's Stations..... 764
Gifford, N. W., Carbon Accumulation in Retorts..... 335
Government Incroachment and Social Decadence..... 42
Grafton, W., Determining Size of Gas Pipes..... 685
Graphite, Manufacture of..... 928
Graves, George W., Exhibition of Cooking by Gas..... 2
Guest, J. J , Value of the Ten Inch Slide Rule from the Educational Standpoint..... 225

H

*Halsey, F. S., Maximum Demand Electric Meters..... 771
Hamerschlag, A. A., Education of Electrical Apprentices and Journeymen..... 111
*Hathaway, E. C., Care and Management of Gas Engines. 690
Hefter, W. Analysis of Commercial Ammonia..... 687
*Heller's Gas Burner..... 646
*Hequembourg's Method of and Apparatus for Dehydrating Gas..... 412
Hintze, Thos. H , "A Paper Unnamed"..... 290
*Hirts' Gas Purifying Apparatus..... 610
*Holgate, T., Coke Handling Plant..... 884
Hours of Labor on Public Works, Interesting Decision..... 896
How Do We Obtain Our Patrons? by A. L. Zwisler..... 408
Hydraulic Mains, Pitch in, by B. O. Tippy..... 406
*Hydraulic Pile Sinking Machine, Culnane..... 116
Hydrofluoric Acid Primary Cell, by J. P. Alexander..... 299
*Hydrogen, Marsh Gas and Nitrogen in Mixture of Gases, Estimation of..... 6
Humphreys, A. C., Correspondence Schools..... 233
Humphreys, J. J., Jr., Notes on the Design and Extension of Gas Plant..... 295
Humphrys, Norton H., Experiences with Incandesent Gas Light.....607, 641, 686, 728
Humphrys, Norton H , Large Gasholders in England..763, 803, 843
Humphrys, Norton H., Special English Correspondence.... 153, 297, 453, 651, 813, 973

I

Illicit Commissions..... 853
Illuminating Device for Marine Service..... 816
Illuminating Gas, Bye-Product Coke Oven for the Manufacture of, by H. W. True..... 844
Illuminating Gas, Products of Combustion of..... 722
Incandescent Electric Lamps, Difference Between Good and Bad..... 970
*Incandescent Gas Burner, Kern..... 806
Incandescent Gas Burners, Analysis of Mantles for..... 188
Incandescent Gas Light, Experiences with, by Norton H. Humphrys.....607 644, 686, 728
*Incandescent Mantles, by Prof. Vivian B. Lewes..... 767
Inclined Retorts, Experience with, by E. Kohler..... 562
*inclined Retorts, Foster's Patent Stopper for..... 223
*Irminger, J. O. V., Wind Pressure on Buildings..... 809
Iron Loss in Transformers..... 931
Iron Making in Central India..... 652
*Interrupter, New Form of the Wehnelt..... 731
Irwin, W. G., Growth of the Oil Trade..... 110
Items of Interest from Various Localities....11, 47, 83, 119, 156, 191, 226, 263, 299, 338, 379, 414, 454, 494, 535, 573, 612, 653, 694, 734, 774, 814, 854, 894, 934, 974

J

Jeans, J. S , World's Consumption of Pig Iron in the Steel Industry..... 925
Jenkins, E. H., Vice-President Ohio Gas Light Association, Address of..... 411

K

*Kern Incandescent Gas Burner..... 806
Kohler, E., Experience with Inclined Retorts..... 562

L

*Laboratory Apparatus, Improved, by J. L. Sammis..... 151
Lambert, Prof. C., Artificial Lighting for Public Institutions 152
Lamps, Incandescent Electric, Difference Between Good and Bad..... 970
*Leak, Stopping a..... 645
Lecompte System of Bunsen Burner Construction..... 78
Lewes, Prof. Vivian B., Acetylene..... 38
*Lewes, Vivian B., Incandescent Mantles..... 767
*Lewis Gas Engine..... 115
*Lewis, G. P., Modern Systems of Retort Heating..... 845
Light, Penetration of Beams of, by B. Speed..... 117
Liquid Air as a New Source of Power: An Engineering Fallacy, by Henry Morton, Ph. D..... 642
Louisville Gas Company vs. Kentucky Heating and Lighting Gas Company, Text of Petition in Equity of..... 731
Lunge, A., Analysis of Commercial Ammonia..... 687
*Lowe Water Gas Apparatus, Beginner's Experiments in Studying the Operation of, by R. W. Polk..... 371
Lynn, J. R., Importance of Proper Boiler Settings in Water Gas Plants..... 374

M

Maccoun, A. E., Electricity as a Motive Power in Modern Steel Works and Blast Furnaces..... 611
*Main Laying, Practical Notes on by Lester Price..... 413
*Mains in Service, Moving..... 682
*Manhattan Elevated Railroad, Pintsch Gas Plant for..... 75
*Mantles for Incandescent Burners, by Prof. Vivian B. Lewes 767
Mantles for Incandescent Gas Burners, Analysis of..... 188
Marine Illuminating Device..... 816
Market for Gas Securities.....13, 49, 85, 121, 156, 193, 228 265, 300, 340, 380, 417, 456, 496, 537, 576, 615, 655, 696, 736, 776, 816, 856, 896, 936, 976
*Marsh Gas, Hydrogen and Nitrogen in Mixtures of Gases, Estimation of..... 6
*Mayers, J. A , Distribution Records: Their Uses and Preservation..... 482
Measurement of Earthwork..... 260
Metal Work, Protection of..... 80
Maunsell, C. R., Standard Charges for Electric Current.... 449
McDonald, Ronald T., Obituary Note..... 46
McKay, W. E , Steam..... 366
*Meter, Differential Rate, by L. C. Reed..... 801
Meter for Gas Cookers, Automatic..... 183
*Meters, Maximum Demand Electric, by F. S. Halsey..... 771
Meters, Non-Integrating Electric, by Prof. W. E. Ayrton.... 970
Method for the Estimation of Carbonic Oxide..... 924
*Method of Making a Simple Calorimeter..... 684
Michigan Gas Association, Sixth Annual Meeting.....374, 406
Miller, Thos. D., Science and Art of Selling Gas..... 845
Minshall, T. H., Batteries in Alternating Current Stations.. 572
Missing Link, by E. W. Schermerhorn..... 450
*Model Office for a Surbuban Gas Company..... 256
*Modern Systems of Retort Heating, by G. P. Lewis..... 845
Morrison, H. K., Advertising..... 331
Morton, Henry, Ph.D., Liquid Air as a New Source of Power: An Engineering Fallacy..... 642
Municipal Franchises, Valuation Clauses in..... 849
Municipal Greed..... 689
Municipal Ownership in Massachusetts, by M. J. Francisco 643

N

*Nagle, A. F., Pipe Flanges and Their Bolts..... 724
Naphthalene, Causes Underlying the Formation of, by Paul Doty..... 967
National Progress, Coal Industry as an Index of..... 43
Natural Gas War in Indiana..... 265
Nernst's Electric Light..... 650
New England Association of Gas Engineers, Twenty-ninth nnual Meeting of.....254, 290, 326, 366
*Nitrogen, Hydrogen and Marsh Gas in Mixtures of Gases, Estimation of..... 6
Nuisance Question in Gas Works, by F. H. Shelton..... 333

O

Obituary Note—Roland T. McDonald..... 46
Ohio Gas Light Association, Fifteenth Annual Meeting 443, 482, 5 563
Oils, Flash Point of, by Alex. Robertson..... 450
Oil Trade, Growth of, by W. G. Irwin..... 110
Oxygen in Vitiated Air, Means of Renewing..... 265

Official Notices—

American Gas Light Association..... 961
Kansas Gas, Water and Electric Light Association. 181, 217, 325, 365
Michigan Gas Association..... ....73, 109, 145, 181, 217, 253
New England Association of Gas Engineers..109, 145, 181, 217
Ohio Gas Light Association.....217, 253, 289, 325, 365
Pacific Coast Gas Association..... 961
Society of Gas Lighting.....1, 37, 181, 521, 641, 681
Western Gas Association.....73, 109, 145, 181, 218, 325, 365, 405, 441, 481, 521, 561, 601, 641, 681, 721, 761, 801, 841 881

P

Paris Exposition of 1900, American Representation at..... 261
Penetration of Beams of Light, by B. Speed..... 117
*Photometer for Water Gas, Rapid-Reading..... 567
Photometer, Portable, Proposal to Legalize..... 569
*Piez, Charles, Coal-Handling Machinery..... 220
Pig Iron in the Steel Industry, by J. S. Jeans..... 925
*Pile Sinking Machine, Culnane Hydraulic..... 116
*Pintsch Gas Plant, Manhattan Elevated Railroad, N. Y. City..... 75
*Pipe Flanges and their Bolts, by A. F. Nagle..... 724
Pipe Lines, Symposium on..... 118
*Pipe Wrench, Browning's Double-Gripping..... 45
*Pipes for Gas..... 645
Pipes for Gas, Determining Size of, by W. Grafton..... 685
Pitch in Hydraulic Mains, by B. O. Tippy..... 406
*Plate Shear, Bertsch Universal..... 79
*Polk, R. W., Beginner's Experiments in Studying the Operation of a Lowe Water Gas Apparatus..... 371
Portland Cement, Effect of Frost on..... 9
Possibilities, by J. A. Waters..... 368
*Price, Lester, Practical Notes on Main Laying..... 413
Products of Combustion of Illuminating Gas..... 722
Protection of Metal Work..... 80
Public Institutions, Artificial Lighting of, by Prof. C. Lambert..... 152
Public Lighting in New York, 1762 to 1899..... 655
Pumps, Principle Underlying Mode of Action of..... 81
Purification, Discussion on..... 3
Purification, Notes on, by A. L. Clarke..... 688
*Purifying Apparatus for Gas, Hirts'..... 610

R

Raynor, C. H., President Michigan Gas Association, Address of..... 836
Recovery of Bye-Products..... 117
*Reed, L. C., Differential Rate Meter..... 804
Refrigerator, Mammoth..... 193
Retort Coke Ovens, Domestic Coke and Briquettes from, by R. M. Atwater..... 218
*Retort Heating, Modern Systems of, by G. P. Lewis..... 845
Retorts, Inclined, Experience with, by E. Kohler..... 562
*Retorts, Inclined, Foster's Patent Stopper for..... 223
Richmond (Va.) Gas Works, Reconstruction of..... 922
*Robb, Prof. W. L., Rotary Transformers and Storage Batteries as Related to Long Distance Transmission..... 926
Robertson, Alex , Flash Point of Burning Oils..... 450
Rosin Gas Plant, Southern, by F. H. Shelton..... 182
*Rotary Transformers and Storage Batteries as Related to Long Distance Transmission, by Prof. W. L Robb..... 926

S

*Sammis, J. L., Improved Apparatus for the Laboratory... 151
Schellenberg, F. Z., President of Central Mining Institute of Western Pennsylvania, Address of..... 187
Schermerhorn, E. W., Missing Link..... 450
Science and Art of Selling Gas, by Thos. D. Miller..... 845
Shadbolt, R. G., Discussion on Purification..... 3
Sheible, Albert, Electric Street Lighting..... 570
Shelton, F. H., Nuisance Question in Gas Works..... 333
Shelton, F. H., Southern Rosin Gas Plant..... 182
Sherman, F. C., Tar Burning..... 369
Shop Floors..... 449
*Short Coke, Manufacture of..... 727
Simple Volumenometer..... 773
Siphons, Principle Underlying Mode of Action of..... 81
Slate Industry of the World..... 493
Slide Rule, Value of, by J. J. Guest..... 225
Smoke, Determination of..... 972
Social Decadence, Example of..... 42
Soldering of Aluminum..... 972
Solution of Solids and Liquids in Gases, by M. P. Villard .10, 74
Southern Rosin Gas Plant, by F. H. Shelton..... 182
Specifications for Wire Coverings and Fittings..... 84
Speed, B., Penetration of Beams of Light..... 117
Spontaneous Ignition of Charcoal..... 261
Standard Charges for Electric Current, by C. R. Maunsell.. 449
Steam, by W. E. McKay..... 366
*Steam Mains for Electric Supply Stations, by R. Summerfield..... 691
*Steam Separator, Test of, by F. L. Emory..... 726
Steam, Superheated, for Burning Carbon from Retorts, by N. W. Gifford..... 325
*Steam Traps for Very High Pressures..... 929
Steam, Utilization of Exhaust..... 223
Steel Industry, World's Consumption of Pig Iron in, by J. S. Jeans..... 925
Steel Works and Blast Furnaces, Electricity as a Motive Power in, by A. E. Maccoun..... 611
*Stopping a Leak..... 645
*Storage Batteries and Rotary Transformers, by Prof. W. L. Robb..... 926
*Suburban Gas Company, Model Office for..... 256
Suction Pipes, Notes on..... 852
Sulphur from Coal, by Chas. C. Upham..... 693
*Summerfield, R., Steam Mains for Electric Supply Stations 691
Superheated Steam for Burning Carbon from Retorts, by N. W. Gifford..... 335
Symposium on Pipe Lines..... 118
Systems of Electric Meter Rates, by E. L. Debell..... 184

T

*Tank for Gasholder, Concrete, Notes on the Construction of, by C. W. Andrews..... 445
Tar Burning, by F. C. Sherman..... 369
Tar From Coal, Preparation of Products..... 807
Thacker Coal Field of West Virginia..... 854
Thompson, G. T., President Western Gas Association, Address of..... 963
Three-Phrase Plants, Secondary Distributing Systems for... 684
Timber and Timber Substitutes, Preserving and Fireproofing, by S. C. Coles..... 377
Tippy, B. O., Pitch in Hydraulic Mains..... 406
Transformers, Iron Loss..... 931
True, H. W., Bye-Product Coke Oven for Manufacture of Illuminating Gas..... 844
Turf Briquettes in Germany..... 154

U

Upham, Chas. C., Sulphur From Coal..... 693
Use of Gas for Purposes Other Than Fuel, by H. W. Douglas 407
Utilization of Exhaust Steam..... 223

V

Valuation Clauses in Municipal Franchises..... 849
Values of Gas Made by Two Companies in San. Francisco, Cal. 451
Villard, M. P., Solution of Solids and Liquids in Gases.... 10, 74
Vitiated Air, Means of Renewing Oxygen in..... 265
Volumenometer, Simple..... 773
Volumetric Estimation of Carbon..... 971

INDEX TO VOL. LXX.

W

Washington Coal Mines in 1898 121
Water Gas Industry, Innovation and Future of, by H. Croissant 409, 448
Water Gas Plants, Importance of Proper Boiler Settings in, by J. R. Lynn 374
*Water Gas, Rapid Reading Photometer for 567
*Water Mains, Example of Electrolysis of 183
Waters, J. A., Possibilities 368
Watt Meters vs. Watt Hour Meters 835
*Wehnelt Interrupter, New Form of 731
*Wind Pressure on Buildings, by J. O. V. Irminger ..... 80)
Wire Coverings and Fittings, New Specifications for 568
Welsbach Light Company, Decision in Favor of 568
Welsbach Street Lighting, by J. W. R. Cline 525
Western Gas Association, Twenty-second Annual Meeting. 962
Wolff, S. E., Desirable Increase and Its Source 376
*Wrench, Browning Double-Gripping 45

Y

Yorke, E. H., Question of Enrichers 367

Z

Zwisler, A. L., Ho Do We Obtain Our Patrons? 408

SPECIAL INDEX OF REPORTS OF PROCEEDINGS OF ASSOCIATIONS.

New England Association of Gas Engineers—Twenty-ninth Annual Meeting.

Address of President 254
Committee on Minute to Memory of Charles F. Warren, Report of 330
Committee on Nomination of Officers, Appointment of 254
Committee on Nomination of Officers, Report of 295
Committee on President's Address, Appointment of 290
Committee on President's Address, Report of 330
New Members, Election of 254
Officers, Election of 295
Question Box 370
Roll Call 290
Secretary and Treasurer, Report of 254
Votes of Thanks 394

PAPERS READ:

Advertising, by H. K. Morrison 331
*Beginner's Experiments in Studying the Operation of a Lowe Water Gas Apparatus, by R. W. Polk 371
Correspondence Schools, by A. C. Humphreys 328
*Distributing Gas at Pressures Higher than Usually Obtained with a Holder, by B. J. Allen 232
Notes on the Design and Extension of Gas Plant, by J. J. Humphreys, Jr 295
Nuisance Question in Gas Works, by F. H. Shelton 333
Paper Unnamed, by Thos. H. Hintze 290
Possibilities, by John A. Waters 368
Question of Enrichers, by E. H. Yorke 367
Steam, by W. E. McKay 366
Superheated Steam for Burning Carbon from Retorts, by N. W. Gifford 335
Tar Burning, by F. C. Sherman 369

Michigan Gas Association—Sixth Annual Meeting.

Address of President 336
Committee on Coal Tar, Report of 409
Committee on Next Place of Meeting, Appointment of 374
Committee on Next Place of Meeting, Report of 408
Committee on Nominations, Report of 409
Committee on President's Address, Appointment of 374
Committee on President's Address, Report of 409
Committee on Resolutions, Appointment of 374
Committee on Resolutions, Report of 409
Executive Committee, Report of 374
New Members, Election of 374
Officers, Election of 409
Question Box 377
Roll Call 374
Secretary and Treasurer, Report of 374

PAPERS READ—

Desirable Increase and Its Source, by S. E. Wolff 376
How Do We Obtain Our Patrons? by A. L. Zwisler 408
Importance of Proper Boiler Settings in Water Gas Plants, by John R. Lynn 374
Pitch in Hydraulic Mains, by B. O. Tippy 406
Use of Gas for Purposes Other Than Fuel, by Henry W. Douglas 407

Ohio Gas Light Association—Fifteenth Annual Meeting.

Address of President 411
Committee on Coal Tar, Report of 532
Committee on Memorials, Report of 531
Committee on Municipal Ownership, Report of 533
Committee on Next Place of Meeting, Report of 531
Committee on Nominations, Report of 566
Committee on President's Address, Appointment of 445
Committee on President's Address, Report of 531
Committee on Statistics, Report of 532
Executive Committee, Report of 444
Executive Committee, Supplemental Report 447
New Members, Election of 444
Officers, Election of 566
Question Box 522, 563
Roll Call 445
Secretary and Treasurer, Report of 445
Votes of Thanks 567

PAPERS READ:

Bunch of Short Topics, by Henry L. Doherty 488
Bye-Product Coke Ovens, by E. E. Eyrenbach 529
*Concrete Gasholder Tank, Notes on the Construction of, by C. W. Andrews 445
*Distribution Records: Their Uses and Preservation, by J. A. Mayers 482
Welsbach Street Lighting, by J. W. Cline 525

Western Gas Association—Twenty-second Annual Meeting.

Address of President 963
Board of Directors, Report of 965
Causes Underlying the Formation of Napthalene and Their Prevention, by Paul Doty 967
Committee on Applications for Membership, Report of 966
Committee on President's Address, Appointment of 965
New Members, Election of 967
Secretary and Treasurer's Report 966
Special Committees, Appointment of 965